

IN THE CLAIMS:

Claim 1 (Canceled)

Claim 2 (Canceled)

Claim 3 (Canceled)

Claim 4 (Canceled)

Claim 5 (Canceled)

Claim 6 (Canceled)

Claim 7 (Currently Amended) A process for biologically treating wastewater comprising the steps of:

a) collecting wastewater for treatment in a waste water
influent region;

b) ~~a~~ flowing influent wastewater from said waste water
influent region with organic components therein
directly into a first anaerobic region ~~without prior~~
~~aerobic treatment~~ and mixing the wastewater therein
with a microorganism biomass to form a mixed liquor;

- c)~~b)~~ flowing a portion of the mixed liquor into a second anaerobic region wherein said biomass ferments portions of said organic components so as to produce short chain fatty acids;
- d)~~c)~~ returning liquid from said second anaerobic region with said short chain fatty acids therein to said first anaerobic region wherein phosphorus is released from microorganisms in said biomass in said mixed liquor and short chain fatty acids are taken up by the microorganisms in said biomass;
- e)~~d)~~ flowing mixed liquor from said first anaerobic region to an aerobic region wherein said short chain fatty acids are metabolized by said microorganisms in said biomass and phosphorus is absorbed by said microorganisms;
- f)~~e)~~ thereafter transferring said mixed liquor to a clarifier region wherein clarified liquid is separated from said biomass; and
- g)~~f)~~ returning at least a portion of the separated biomass with phosphorus therein to said first anaerobic region.

Claim 8 (Original) The process according to Claim 7 including the step of:

- a) flowing said biomass in said second anaerobic region at a flow rate so as to produce a biomass concentration of greater than about 7000 milligrams per liter in said second anaerobic region.

Claim 9 (Previously presented) The process according to Claim 8 including the step of:

- a) flowing said biomass into said first anaerobic region at a flow rate so as to produce a biomass concentration of less than about 4000 milligrams per liter in said first anaerobic region.

Claim 10 (Canceled)

Claim 11 (Currently Amended) In a process for treating wastewater by mixing influent wastewater from an influent wastewater collection region with biomass to form a mixed liquor in a first anaerobic region ~~without prior aerobic treatment~~ of said influent wastewater and thereafter treating the mixed liquor in an aerobic region; the improvement comprising the step of:

- a) flowing influent wastewater directly from said

wastewater collection region to said first anaerobic region and diverting a slip stream of said mixed liquor to a second anaerobic region wherein the mixed liquor from said first anaerobic region is subjected to a lower flow rate than in said first anaerobic region thereby increasing the percentage by weight of short chain fatty acids in the mixed liquor in the second anaerobic region in comparison to the first anaerobic region and thereafter returning the mixed liquor from said second anaerobic region to said first anaerobic region.

Claim 12 (Canceled)

Claim 13 (Previously presented) The process according to Claim 17 including:

- a) selecting said slip stream as less than about 10% by weight of a total wastewater flow.

Claim 14 (Original) The process according to Claim 11 including the step of:

- a) flowing said mixed liquor upwardly through said second anaerobic region.

Claim 15 (Original) The process according to Claim 14 including the step of:

- a) sizing and shaping said second anaerobic region such that the flow rate through said second anaerobic region is sufficiently slow to allow biomass to form a blanket extending from near a bottom to near an outflow from said second anaerobic region.

Claim 16 (Previously presented) A process for biologically treating wastewater comprising the steps of:

- a) flowing influent wastewater with organic components therein into a first anaerobic region;
- b) measuring the average phosphorus content by weight of said influent wastewater;
- c) measuring the average short chain fatty acid content by weight of said influent wastewater;
- d) mixing the influent wastewater in said first anaerobic region with a microorganism biomass to form a mixed liquor;
- e) flowing a portion of the mixed liquor into a second anaerobic region wherein said biomass ferments portions of said organic components so as to produce short chain fatty acids;

- f) ensuring that the flow of mixed liquor to said second anaerobic region is sufficient to produce enough short chain fatty acids in said second anaerobic region that when combined with the short chain fatty acids in said influent wastewater the total is greater than four times the amount of phosphorus in said influent wastewater by weight;
- g) returning liquid from said second anaerobic region with said short chain fatty acids therein to said first anaerobic region wherein phosphorus is released from microorganisms in said biomass in said mixed liquor and short chain fatty acids are taken up by the microorganisms in said biomass;
- h) thereafter flowing mixed liquor from said first anaerobic region to an aerobic region wherein said short chain fatty acids are metabolized by the microorganisms in said biomass and phosphorus is absorbed by said microorganisms;
- i) thereafter transferring said mixed liquor to a clarifier region wherein clarified liquid is separated from said biomass; and
- j) returning at least a portion of the separated biomass with phosphorus therein to said first anaerobic region.

Claim 17 (Previously presented) In a process for treating wastewater by mixing the wastewater with biomass to form a first mixed liquor in a first anaerobic region and thereafter treating the mixed liquor in an aerobic region; the improvement comprising the step of:

- a) prior to said wastewater entering said first anaerobic region diverting a first portion of said wastewater directly to a second anaerobic region wherein a second mixed liquor is subjected to a lower flow rate than in said first anaerobic region and thereafter returning the mixed liquor from said second anaerobic region to said first anaerobic region; and
- b) flowing a remaining second portion of the wastewater directly to said first anaerobic region.